

which accompanied the storm. 25th, a severe storm formed in Butler county, and swept in a southeasterly direction through Saunders, Lancaster, Cass, Nemaha and Otoe counties, destroying nearly all small grain and beating down the corn. The storm was accompanied by hail, which caused much destruction; at Wahoo, several dwellings were unroofed and all windows facing the west were demolished; a herd of ponies was blown eight miles southward; at Clear Creek, a school-house was demolished, and severe damage was done at Brainard. At Lincoln, the storm was also very severe, most of the orchards and crops being ruined by the large hail-stones. Several persons were injured during the storm, some fatally.

New York: Amsterdam, 17th, a tornado struck the town and did considerable damage to buildings of light construction. The storm-path was sixty feet wide.

New Jersey: Freehold, 4th, 9.20 to 10.15 p. m., a destructive storm occurred over a strip of country south of this place. Hail fell to a depth of two inches, causing damage to the amount of more than one thousand dollars to crops in the immediate vicinity, and several houses were injured. 27th, severe thunder-storm, accompanied by hail, which was mostly jagged, broken ice, some pieces of which measured one and three-eighths inches long and half an inch thick. From 5.50 to 5.57 p. m., the wind reached a velocity of sixty miles per hour. Reports from localities southwest of Freehold state that much damage was done to crops.

North Carolina: Weldon, 4th, a destructive tornado, originating in Southampton county, Virginia, swept through Northampton and Halifax counties; many houses were blown down and crops were completely ruined. The storm was accompanied by heavy hail-stones of unusual size, which covered the ground to a depth of several inches. At Weldon, several buildings were blown down, and two children were killed by falling timbers. At Garysburg, the "Fetter" academy was blown down. The damage to property by this storm, will amount to several thousand dollars. Kittyhawk, 28th, severe wind storm, telegraph poles were prostrated, and one house was blown down.

Ohio: Sandusky, 18th, severe wind storm, many telegraph poles and trees blown down. 30th, a heavy wind storm occurred over southern Ohio, telegraph wires and trees were prostrated, and growing crops were blown down, corn and oats being broken off by the heavy rain, and several houses were unroofed.

South Carolina: Stateburg, 22d, about three miles north of station, a storm of considerable energy occurred. Much damage was done and several large trees were uprooted.

Tennessee: Nashville, 18th, a severe wind storm, reaching a velocity of fifty-two miles an hour; trees, fences, and awnings were destroyed, and several houses were unroofed. Spring City, Rhea county, a tornado occurred on the 25th; several buildings were blown down.

Texas: Henrietta, 12th, at 7.20 p. m., a severe storm burst over the city, doing considerable damage to buildings. The storm cloud had a whirling motion, and dipped occasionally toward the earth, each dip being attended with great destruction. A house was twisted off its foundation, and many barns and outbuildings were blown away. As the storm cloud only struck the ground at intervals, many houses in its close proximity, were left untouched. The total damage is estimated at \$6,000.

Vermont: Woodstock and Strafford, 19th, a severe wind storm passed through these places; many buildings and fences were blown down and trees uprooted. The track of the storm was about fifteen miles in length and from one to five miles in width.

Wisconsin: 27th, a tornado formed near the village of Onalaska and passed through that place at 10.45 a. m.; it then passed in a northeasterly direction through La Crosse, Monroe, and part of Vernon counties. The whole distance traveled was about forty miles, and the width of the

track was about eighty rods. Several buildings were unroofed, but the principal damage was done to the crops, which were in some cases completely carried away; great numbers of fruit trees were twisted and broken. The towns of Bangor, Washington, Jefferson and Sheldon were also visited by the storm and sustained more or less damage. One person was seriously injured; the damage to buildings is estimated at \$20,000, and the damage to crops cannot be estimated. The observer at La Crosse reports the appearance of the storm cloud, as follows: The storm cloud appeared of a dark blue or nearly black color, followed immediately by a cloud which appeared to be highly illumined and of a yellow color, changing at times to green. After the cloud passed the station the wind changed to north, with moderate breeze and light rain. Five miles from station, rain is reported to have fallen in torrents, many streams were swollen and bridges washed away. At Cashton the storm destroyed five houses and caused great damage to crops. Several persons were injured but none fatally.

VERIFICATIONS.

INDICATIONS.

The detailed comparison of the tri-daily indications for June, 1882, with the telegraphic reports for the succeeding twenty-four hours, shows the general average percentage of verifications to be 86.7 per cent. The percentages for the four elements are: Weather, 88.9; Direction of the Wind, 80.9; Temperature, 88.3; Barometer, 88.9 per cent. By geographical districts they are: For New England, 88.4; middle Atlantic states, 90.1; south Atlantic states, 86.7; east Gulf states, 85.7; west Gulf states, 91.9; lower lake region, 85.7; upper lake region, 81.5; Tennessee and the Ohio valley, 88.5; upper Mississippi valley, 84.8; lower Missouri valley, 82.9; northern Pacific coast region, 94.4; middle Pacific coast region, 98.9; southern Pacific coast region, 97.8.

There were 160 omissions to predict (37 being due to the absence of reports from the Pacific coast) out of 3,690, or 4.33 per cent. Of the 3,530 predictions that have been made, 109, or 3.08 per cent., are considered to have entirely failed; 92, or 2.60 per cent., were one-fourth verified; 398, or 11.30 per cent., were one-half verified; 365, or 10.33 per cent., were three-fourths verified; 2,566, or 72.69 per cent., were fully verified, so far as can be ascertained from the tri-daily reports.

CAUTIONARY SIGNALS.

One hundred cautionary signals were displayed during the month of June, of which eighty-two, or 82 per cent were justified by winds of twenty-five miles per hour, at or within one hundred miles of the station. Eight "off-shore" signals were displayed, all of which were fully justified as to direction and velocity. One hundred and eight signals of all kinds were displayed, of which ninety, or 83.3 per cent., were justified. The above does not include signals ordered at sixty-nine display stations, where the velocity is only estimated.

Ninety-five winds of twenty-five miles per hour or over, were reported, for which no signals were ordered.

Fifteen signals were reported late.

NAVIGATION.

STAGE OF WATER IN RIVERS.

In the table on the right-hand of chart iii., are given the highest and lowest stages of water observed at Signal Service stations during the month of June, 1882. In the first column of this table are given the heights of water on the gauge, which have been found dangerous to property at stations:

The Mississippi reached its highest stage at Keokuk on the last of the month, when it was one foot, three inches above the danger-line. At Cairo it was two feet above the danger-line on the 6th of the month, and, on the 17th, it had fallen to thirty-two feet, four inches, the lowest point reached during the month. At Vicksburg, it remained above the danger-line